

WHAT IS CLAIMED IS:

- 1                   1.       A method for removing hair from a patient's skin, said method  
2 comprising:  
3                   transcutaneously focusing high intensity acoustic energy at hair  
4 follicles beneath the skin.
- 1                   2.       A method as in claim 1, wherein the acoustic energy is focused at  
2 predetermined follicle locations.
- 1                   3.       A method as in claim 2, wherein said follicle locations are determined  
2 by acoustic imaging.
- 1                   4.       A method for removing hair from a patient's skin, said method  
2 comprising:  
3                   scanning an acoustic transducer over the skin surface to identify  
4 locations of the hair follicles beneath the skin; and  
5                   transcutaneously focusing high intensity acoustic energy at at least  
6 some of the identified follicle locations.
- 1                   5.       A method as in claim 4, wherein the high intensity acoustic energy is  
2 transcutaneously focused from an acoustic transducer.
- 1                   6.       A method as in claim 5, wherein a single acoustic transducer is used  
2 both to scan for the hair follicle locations and to deliver the focused high intensity acoustic  
3 energy.
- 1                   7.       A method as in claim 5, wherein different acoustic transducers are used  
2 for scanning for the hair follicle locations and for delivering the focused high intensity  
3 acoustic energy.
- 1                   8.       A method for removing hair from a patient's skin, said method  
2 comprising:  
3                   immobilizing a transducer platform over a target area of the patient's  
4 skin;  
5                   scanning an acoustic transducer over the skin to determine the  
6 locations beneath the skin of hair follicles relative to the mobilized transducer platform;

7                                positioning an acoustic transducer over the skin at at least some of the  
8    determined locations relative to the immobilized platform; and  
9                                transcutaneously focusing high intensity acoustic energy at hair  
10   follicles from the positioned acoustic transducer.

1                                9.        A method as in claim 8 wherein scanning comprises mechanically  
2    advancing the transducer in X- and Y-directions over an imaging plane to known coordinates.

1                                10.       A method as in claim 9, wherein positioning comprises mechanically  
2    advancing the transducer in X- and Y- directions to the same coordinates.

1                                11.       A method as in claim 1, 4, or 8, wherein transcutaneously focusing  
2    comprises adjusting the depth of focus.

1                                12.       A method as in claim 11, wherein adjusting the depth of focus  
2    comprises translating a transducer along a vertical line.

1                                13.       A method as in claim 11, wherein adjusting the depth of focus  
2    comprises adjusting the curvature of a transducer surface.

1                                14.       A method as in claim 11, wherein adjusting the depth of focus  
2    comprises controlling the operation of a phased array transducer.

1                                15.       A method as in claim 1, 4, or 8, wherein the high intensity acoustic  
2    energy is focused at a depth beneath the skin in the range from 1 mm to 6 mm and at a width  
3    in the range from 0.1 mm to 0.3 mm.

1                                16.       A method as in claim 15, wherein the high intensity acoustic energy is  
2    delivered under conditions selected to raise the temperature at the hair follicle to at least 50°C  
3    for a time of at least 0.1 sec.

1                                17.       A method as in claim 16, wherein the ablative energy is delivered in an  
2    amount from 0.1 J to 10 J to each hair follicle.

1                                18.       A method as in claims 4 or 8, further comprising producing an image  
2    of the scanned hair follicle locations.

- 1                    19.     A method as in claim 18, further comprising designating which of the  
2 hair follicles for which locations have been scanned and to be ablated.
- 1                    20.     A system for hair removal, said system comprising:  
2                                a transducer selectively operable to image hair follicle locations and to  
3 acoustically ablate hair follicles at said imaged locations;  
4                                means for tracking the location of the transducer over a patient's skin  
5 surface; and  
6                                a controller for acquiring image data from the transducer and directing  
7 high intensity acoustic energy to selected ones of the imaged hair follicles.
- 1                    21.     A system as in claim 20, wherein the tracking means comprises:  
2                                a transducer platform adapted to be engaged against the patient's skin;  
3 and  
4                                a drive system for advancing the transducer over a planar region  
5 defined by the platform, wherein the position of the transducer can be both selected and  
6 recorded.
- 1                    22.     A system as in claim 21, wherein the drive system is a X- Y motion  
2 positioner.
- 1                    23.     A system as in claim 22, wherein the X- Y motion positioner is  
2 repeatable to  $\pm 0.01$  mm.
- 1                    24.     A system as in claim 1, 4, or 8, wherein the high intensity acoustic  
2 energy is focused at a depth beneath the skin in the range from 1 mm to 6 mm and at a width  
3 in the range from 0.1 mm to 0.3 mm.
- 1                    25.     A system as in claim 24, wherein the high intensity acoustic energy is  
2 delivered under conditions selected to raise the temperature at the hair follicle to at least 50°C  
3 for a time of at least 0.1 sec.
- 1                    26.     A system as in claim 24, wherein the ablative energy is delivered in an  
2 amount from 0.1 J to 10 J to each hair follicle.

1                    27.     A system as in claim 20, further comprising a display which provides a  
2     visual depiction of the hair follicle locations.

1                    28.     A system as in claim 27, further comprising means for a user to  
2     designate which of the hair follicles in the visual depiction are to be ablated.